

What Is Claimed Is:

1           1. A method of implementing a plurality  
2 of communication channels on a single twisted pair  
3 telephone connection comprising the steps of:  
4           interfacing a first communication device  
5 with said telephone connection, said first  
6 communication device configured to communicate over  
7 said telephone connection on a first channel defined  
8 by a first frequency band;  
9           interfacing a second communication device  
10 with said telephone connection, said second  
11 communication device configured to communicate with  
12 said telephone connection on a second channel; and  
13           interfacing a third communication device  
14 with said telephone connection, said third  
15 communication device configured to communicate with  
16 said telephone connection on a third channel, wherein  
17 said first, second, and third communication channels  
18 each reside in separate predetermined frequency  
19 bands.

1           2. The method of claim 1 wherein the step  
2 of interfacing said second communication device  
3 includes the step of:  
4           monitoring the signal power of a second  
5 frequency band above said first frequency band and,  
6 if the detected signal power is below a predetermined  
7 level, then assigning said second channel to said  
8 second frequency band, else monitoring the signal

9 power of a third frequency band above said first and  
10 second frequency bands and, if the detected signal  
11 power is below a predetermined level, then assigning  
12 said second channel to said third frequency band.

1 3. The method of claim 2 wherein the step  
2 of interfacing said third communication device  
3 includes the step of:

4 monitoring the signal power of a second  
5 frequency band above said first frequency band and,  
6 if the detected signal power is below a predetermined  
7 level, then assigning said third channel to said  
8 second frequency band, else monitoring the signal  
9 power of a third frequency band above said first and  
10 second frequency bands and, if the detected signal  
11 power is below a predetermined level, then assigning  
12 said third channel to said third frequency band.

1 4. The method of claim 3 wherein the  
2 steps of monitoring the signal power of said second  
3 and third frequency bands includes the step of  
4 integrating and averaging the measured signal power  
5 over a predetermined time period.

1 5. In a network connection including a  
2 first communication device communicating with said  
3 network across a single twisted pair telephone line  
4 in the baseband POTS frequency band, a method of  
5 deriving additional communication channels over said

6 single twisted pair telephone line comprising the  
7 steps of:

8 coupling a plurality communication devices  
9 to said network connection;

10 detecting a communication request from one  
11 of said communication devices and, in response;

12 monitoring the signal quality in a series  
13 of predefined frequency bands successively higher  
14 than said POTS frequency band and configuring said  
15 communication device to communicate with said network  
16 across the first said predefined frequency band  
17 wherein said signal quality is above a threshold  
18 value.

1 6. The method of claim 5 wherein the step  
2 of configuring said communication device to  
3 communicate with said network across the first said  
4 predefined frequency band wherein said signal quality  
5 is above a threshold value further comprises the step  
6 of monitoring the signal quality of said  
7 communications with said network and, if the signal  
8 quality deteriorates below said threshold, monitoring  
9 the signal quality in said remaining predefined  
10 frequency bands, and reconfiguring said communication  
11 device to communicate with said network across the  
12 first said predefined frequency band wherein said  
13 signal quality is above a threshold value.

1 7. The method of claim 5 wherein said  
2 first communication device and said plurality of

3 communication devices are located at a single  
4 customer premises and communicate with said network  
5 via a single twisted pair telephone line.

1 8. The method of claim 5 wherein said  
2 first communication device is located at a first  
3 customer premises and at least one of said plurality  
4 of communication devices are located at a second  
5 customer premises, said first and second customer  
6 premises communicating with said network via the same  
7 twisted pair telephone line.

1 9. A communications arrangement between a  
2 PSTN and a customer premises connected by a single  
3 twisted pair telephone transmission line comprising:

4 a first communication device configured to  
5 communicate across said telephone transmission line  
6 on a first channel defined by a first frequency band;

7 a second communication device configured to  
8 communicate across said telephone transmission line  
9 on a second channel; and

10 a third communication device configured to  
11 communicate across said telephone transmission line  
12 on a third channel, wherein said first, second, and  
13 third communication channels each reside in separate  
14 predefined frequency bands, said second and third  
15 communication channels being assigned a respective  
16 frequency band in response to a respective  
17 communication request from said communication device  
18 by sequentially monitoring the signal quality in each

19 successively higher frequency band and configuring  
20 said communication device to communicate with said  
21 network across the first said predefined frequency  
22 band wherein said signal quality is above a threshold  
23 value..

1 10. The arrangement of claim 9 wherein  
2 said first communication device is a telephone and  
3 said first frequency band is the baseband POTS  
4 frequency band.

1 11. The arrangement of claim 9 wherein  
2 said second and third communication devices are  
3 configured to communicate across said telephone  
4 transmission line using quadrature amplitude  
5 modulated digital signals.

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